



Contribution ID: 25

Type: Plenary

## EBS: A New Light for Science - first scientific highlights

*Monday, 5 September 2022 14:45 (45 minutes)*

The ESRF is the first high-energy, fourth-generation synchrotron, which constitutes a landmark for fundamental and innovation-driven research. With the support of the ESRF's international partner countries, a brand-new generation of high-energy synchrotron, the ESRF's Extremely Brilliant Source (EBS) was launched in 2020 with superior X-ray performances (up to a factor 100) in terms of brilliance, coherence and emittance. In the quest to push the boundaries of knowledge and technology for the benefit of society, EBS produces the most brilliant X-rays to unveil the structure of matter. Thus, EBS provides scientists from all over the world with new opportunities to pioneer new fields of investigation for fundamental research, also permitting unprecedented analysis and understanding of materials down to atomic resolution. Based on scientific excellence, research carried out with the EBS contributes to addressing the complex global challenges that our society faces, such as health, energy and the environment. Pushing the frontiers of science, ESB makes the invisible visible, unveiling the secrets of matter to advance fundamental knowledge and new applications, covering biomedical science, novel materials for energy, extreme conditions (planetary research and geoscience, cutting-edge materials), nanomaterials, etc. It also contributes to the development of new and clean technologies for industry and to preserving humanity's cultural heritage, lighting the way to a brighter, sustainable and peaceful future.

This talk will present the EBS benefits, its exploitation and the new experimental capabilities available to academic and industrial users in Physical and Life Sciences. The first scientific highlights from the main flagship and refurbished beamlines will be briefly described. Like a super-microscope, the presentation will illustrate how the enhanced performance of the X-rays, combined with new stations and state-of-the-art instruments, will revolutionize biomedical phase-contrast imaging, and will make the study the structure of condensed matter possible at the nanometre scale under operando or extreme thermodynamical conditions with higher resolution, greater image quality and faster framerate. Finally, this presentation will give a summary of the status of the beamlines under construction, their design choices and strategic research, a snapshot of its present status and some considerations of their future perspectives.

### Would you like to participate in the Poster Prize competition?

No

**Primary author:** Dr MARTÍNEZ-CRIADO, Gema (European Synchrotron Radiation Facility)

**Presenter:** Dr MARTÍNEZ-CRIADO, Gema (European Synchrotron Radiation Facility)

**Session Classification:** AUSE Plenary I